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Conference Abstract

Documenting Marine Species Traits in the World Register of Marine Species (WoRMS): Current status, Future Plans and Encountered Challenges

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Abstract

The importance of describing species patterns and the underlying processes explaining these patterns is essential to assess the status and future evolution of marine ecosystems. This requires biological information on functional and structural species traits such as feeding ecology, body size, reproduction, life history, etc.

To accommodate this need, the World Register of Marine Species (WoRMS) (WoRMS Editorial Board 2017) is expanding its content with trait information (Costello et al. 2015), subdivided into 3 main categories: (1) taxonomy related traits, e.g. paraphyletic groups, (2) biological and ecological traits-specific characteristics of a taxon, e.g. body size or feeding type and (3) human defined traits, e.g. the legal protection status of species, whether a species is introduced, harmful, or used as an ecological indicator.

Initially, priority was given to the inclusion of traits that could be applied to the majority of marine taxa and where the information was easily available. The main driver for this approach was that the inclusion of these traits should result in new research, which in turn would drive improvements in the quality and quantity of trait information. Pilot projects were

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carried out for different species groups, allowing a thorough documentation of a selection of traits. In parallel, a standard vocabulary was put together (http://www.marinespecies.org/traits/wiki/), based on already existing resources to cover all marine life. All documented traits needed to be compliant with this vocabulary, in order to make the data as widely useable as possible, across groups. Defining a trait across all marine life is not trivial, as scientists can use terms in a different way between groups. This stresses the importance for users to realize these differences in terminology, before they analyse a trait across all taxa.

Some traits were thought to be quite straightforward to document, although practice proved otherwise. Such a trait is body size, where the aim was to document the numerical value of the 'maximum body size in length'. In reality, a lot of variation is possible (e.g. for fish: fork length versus standard length) and maximum size is not always considered relevant from an ecological point of view. On the other hand, documenting numerical body size for each marine species is quite time consuming. Therefore, a complementary size trait will be documented, indicating whether taxa are considered as micro, meio, macro or mega.

Whereas the initial approach was to complete the register for each tackled trait relevant for all marine species, we now complement this by (1) documenting several traits within a specific group, regardless whether this trait is also present in other taxon groups, and (2) documenting one specific trait, covering a variety – but not all – taxonomic groups, e.g. the composition of the skeleton for calcareous animals.

Where possible, we aim to document a trait on a higher taxonomic level to allow the work to progress more rapidly. As the database allows top-down inheritance of traits, exceptions can easily be documented. In addition, collaborations are sought with already running initiatives such as Encyclopedia of Life.

Very soon, all the documented traits will be searchable through the Marine Species Traits Portal. The human-defined traits are already accessible through the EMODnet Biology Portal (http://www.emodnet-biology.eu/toolbox), in combination with distribution information from the European Ocean Biogeographic Information System (EurOBIS; www.eurobis.org; Vandepitte et al. 2011; Vandepitte et al. 2015) and taxonomy from WoRMS (www.marinespecies.org). Through the LifeWatch Taxonomic Backbone (LW-TaxBB) (http://www.lifewatch.be/data-services/), services are offered to access these traits, combined with data and information from other resources such as WoRMS and (Eur)OBIS.

We would like to acknowledge the EMODnet Biology and the LifeWatch project, in which the Flanders Marine Institute (VLIZ) – host institute of WoRMS – is responsible for the development of the LW-TaxBB. Both projects provide funding for the documentation of trait data and development of services allowing researchers to easily access the available data, in combination with data from other sources.

Keywords

species traits, marine biodiversity, LifeWatch Taxonomic Backbone, World Register of Marine Species

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